

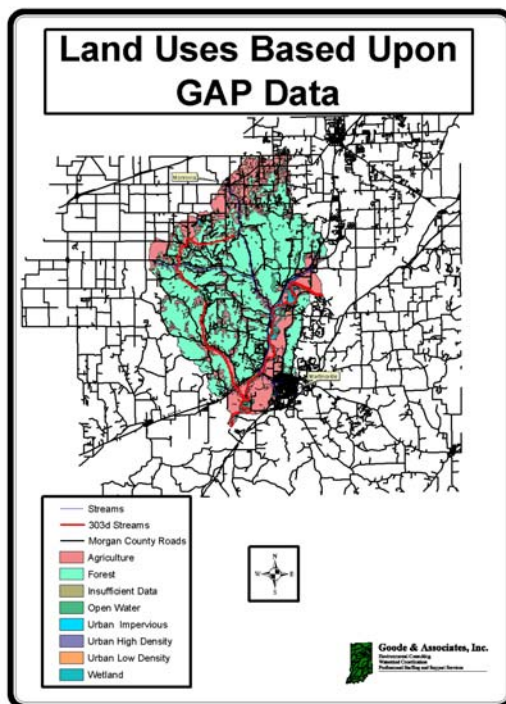
SECTION 8 **Development, Planning, and Zoning**

8.1 IDENTIFYING PROBLEMS

8.1.1 What Was Already Known

Land use within the entire White River Watershed is predominantly deciduous forest including mixed forest, shrubland, and woodland species.

Figure 8.1: GAP land use map of watershed with subwatershed boundaries



According to the most recent GAP data, deciduous forest comprise 60% or 31,693 acres followed by agriculture row crops at 20% (10,232 acres) and pasture at 13% (7,049). The GAP data classifies only a small percentage, 2.1% (1083 acres) of land in the White River Watershed as urban low density, urban high density, and urban impervious (Table 8-1)(USGS, 1997). The White River Martinsville and White River Centerton subwatersheds contain the

greatest amount of urban land uses – 748 acres and 144 acres respectively. The City of Martinsville and SR 67 are located in these subwatershed. These numbers are likely to increase as the City of Indianapolis continues to grow and influence land use change in Morgan County.

There are two urban centers in the White River Watershed: Martinsville and Monrovia. Both are only partially located in the watershed. The Town of Monrovia is located along SR 42 just south of the I-70 interchange at the northwest corner of the watershed and the City of Martinsville is just east of SR 67 at the southeastern edge of the White River Watershed.

Figure 8.2: Simple location map of county, watershed, communities and roads

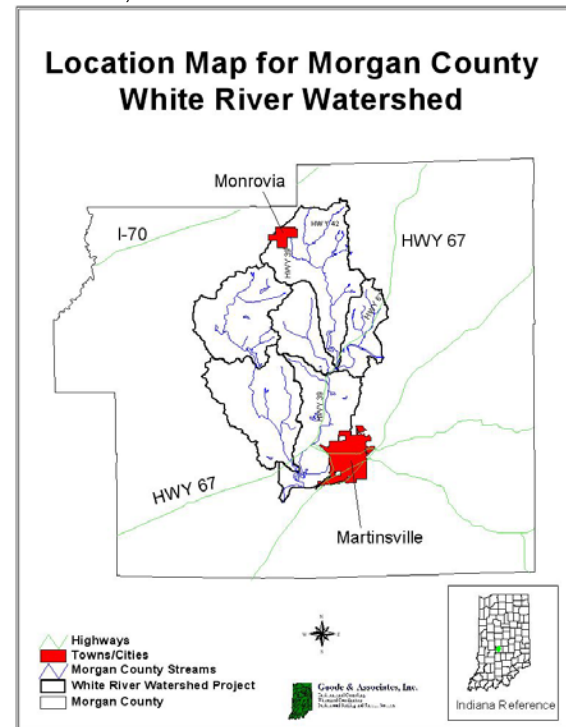


Table 8-1 GAP Data Land Use Classifications

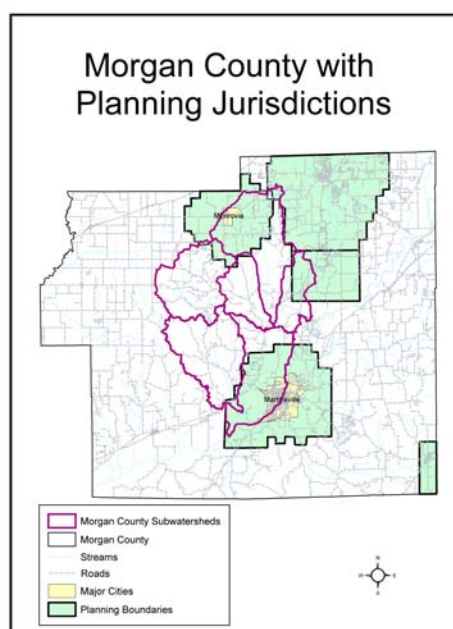
Land Use Classification							
	White River	Sycamore Creek	Lambs Creek-Patton Lake	Lambs Creek-Goose Creek	Highland Creek	White River Centerton	White River Martinsville
Pasture	7,059 Ac. (13%)	2,718 Ac. (5.2%)	1,270 Ac. (2%)	1,558 Ac. (3.0%)	542 Ac. (1.0%)	337 Ac. (0.6%)	624 Ac. (1.2%)
Row Crops	10,232 Ac. (20%)	2,218 Ac. (4.2%)	1,875 Ac. (3.6%)	996 Ac. (2.0%)	189 Ac. (0.4%)	1,319 Ac. (2.5%)	3,635 Ac. (7%)
Deciduous Forest**	31,693 Ac. (60%)	6,57 Ac. (13%)	6,254 Ac. (12%)	8,432 Ac. (16%)	4,345 Ac. (8.3%)	2,184 Ac. (4.0%)	3,942 Ac. (7.5%)
Conifer Forest	119 Ac. (0.2%)	36 Ac. (0.1%)	27 Ac. (0.05%)	7 Ac. (0.01%)	4.3 Ac. (0.01%)	30 Ac. (0.05%)	15 Ac. (0.02%)
Open Water	756 Ac. (1.4%)	142 Ac. (3%)	95 Ac. (0.2%)	27 Ac. (0.05%)	1.0 Ac. (0.002%)	91 Ac. (0.17%)	400 Ac. (0.8%)
Urban High Density	207 Ac. (0.4%)	14 Ac. (0.02%)	0 Ac. (0%)	0 Ac. (0%)	0 Ac. (0%)	10 Ac. (0.02%)	183 Ac. (0.3%)
Urban Impervious	309 Ac. (2.1%)	33 Ac. (0.06%)	44 Ac. (0.08%)	0 Ac. (0%)	0 Ac. (0%)	105 Ac. (0.2%)	127 Ac. (0.2%)
Urban Low Density	567 Ac. (1.1%)	99 Ac. (0.2%)	0 Ac. (0%)	0 Ac. (0%)	0.5 Ac. (0.001%)	29 Ac. (0.05%)	438 Ac. (0.8%)
Wetland***	1,492 Ac. (3%)	138 Ac. (0.3%)	104 Ac. (0.2%)	107 Ac. (0.2%)	42 Ac. (0.1%)	395 Ac. (0.8%)	706 Ac. (1.3%)
Total Acres	52,438 Ac. (100%)	11,968 Ac. (100%)	9,669 Ac. (100%)	11,127 Ac. (100%)	5,124 Ac. (100%)	4,480 Ac. (100%)	10,070 Ac. (100%)
** Includes mixed forest, shrubland, woodland							
*** Includes several wetland types							

(USGS, 1997)

The City of Martinsville is the countyseat for Morgan County. According to the 2000 Census, the City of Martinsville is the largest community in Morgan County with 11,698 people or 17.5% of the County's population. The Town of Monrovia is the 6th largest community in the County with 628 people (US Census, 2000). Both Martinsville and Monrovia are within 30 miles or less of downtown Indianapolis and have, as a result, become popular bedroom communities for Indianapolis' workforce.

There are three planning organizations in the White River Watershed: Morgan County, Martinsville, and Monrovia. Each planning organization has a Plan Commission, Planning Director, and planning staff which deal with development, planning, and zoning issues within their planning jurisdiction.

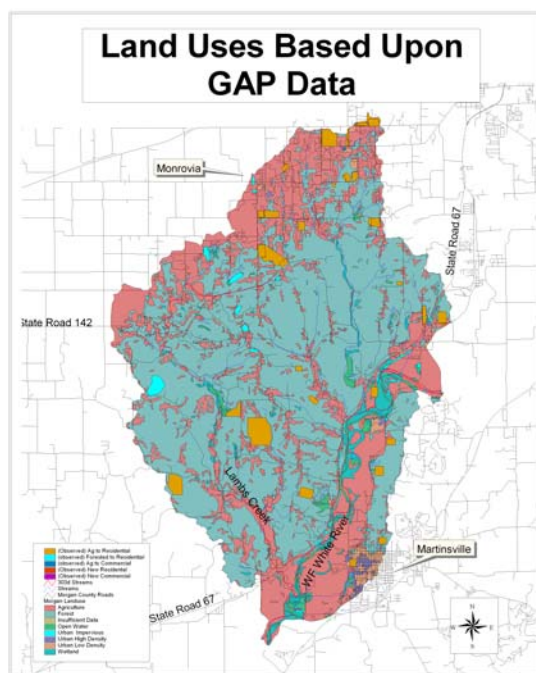
Figure 8-3 map of Morgan County and planning jurisdictions.



8.1.2 What Was Learned During the Process

In the fall of 2000, 10 volunteers from Morgan County conducted a windshield survey of the White River Watershed. The purpose of this windshield survey was to identify visible changes in land use from the most recent GAP data. The volunteers observed changes in land use from agriculture to residential; forest to residential; new residential; and new commercial.

Figure 8.4: map of observed land use changes (in orange) since between 1998 and 2001



The subwatersheds that appeared to have the greatest change in land use were Sycamore Creek, White River Centerton, and White River Martinsville. These subwatersheds are closest to the City of Indianapolis, SR 67, and the City of Martinsville. Approximately 95% of the land use change occurring according to the volunteers is residential development. These developments include large tract subdivisions, single-family clustered developments, and large lot or estate-type developments.

8.1.3 Causes or Probable Causes of Impairments and Threats

There is a strong relationship between land use and water quality. What occurs on the land ultimately affects the water and in turn, the health, safety, and well being of the community. As far as water quality is concerned, there are two types of land uses: those that benefit water quality and those that impair water quality. Land uses such as natural or vegetated areas have a positive impact on water quality. These areas allow stormwater to slowly soak into the ground, naturally filtering pollutants and sediments before draining to nearby streams. Other land uses can have a negative impact on water quality. Impervious areas such as rooftops, driveways, streets, parking lots, etc. prevent rain from naturally infiltrating into the soil and as a result cause rapid discharge of unfiltered water into receiving streams.

According to the data collected during the development of this Watershed Management Plan, the causes or probable causes of impairments and threats to water quality are failing septic systems, development in natural areas and on prime agricultural land, and livestock management. With respect to addressing these water quality concerns through development, planning, and zoning, stronger language and enforcement, where applicable, could be added to the Comprehensive Plan, Zoning Ordinance, and Subdivision Control Ordinance to address water quality concerns without affecting an individual's right to develop their land.

8.1.4 Sources or Probable Sources of Pollutants or Conditions Causing Water Quality Impairments

As mentioned in the previous section, there is a strong relationship between land use and water quality. Sources or probable sources of pollutants or conditions causing water quality impairments as it relates to development, planning, and zoning include:

- 1) Unchecked and unregulated growth and development as a result of insufficient language to protect water quality in planning and zoning documents.
- 2) Sediment runoff from construction sites without adequate erosion and sediment control best management practices (BMPs).
- 3) Encroachment from development into natural areas including riparian areas, streams, lakes, and wetlands.
- 4) Pollutants carried by stormwater from impervious areas such as parking lots, roads, drives, and rooftops draining directly into waterways without any filtration.
- 5) Insufficient state resources to enforce erosion control requirements (i.e., Rule 5) due to disproportionate relationship between available staff numbers and the rapid rate of local land use change.

8.1.5 Prioritization

The following are priorities for addressing water quality concerns through development, planning, and zoning as part of this watershed planning effort:

- 1) Education for developers, planners, and decisions-makers of how land use planning directly impacts water quality. Changing attitudes and behaviors about water quality is important to the long-term success of this Watershed Management Plan.
- 2) Improved enforcement of erosion and sediment control BMPs to reduce the amount of sediment entering nearby waterways. This is especially important on the highly erodible soils in Morgan County.
- 3) Establish setbacks and buffers for riparian corridors, floodplains, waterways, and wetlands. Undeveloped lands adjacent to natural areas will naturally trap and filter harmful sediments and pollutants before entering receiving waterbodies.
- 4) Encourage development to occur in proximity to established infrastructure and services in existing communities.

Limit large, multiple home developments in remote rural and natural areas where available infrastructure and services do not exist.

8.2 GOALS AND DECISIONS

8.2.1 Goal for Improvement and Protection

Primary Goal #4 of this Watershed Management Plan, as outlined in Section 1 of this document is, “to the greatest extent possible and with existing and potential resources, improve and protect water quality in the watershed with the intention, where applicable and appropriate, to achieve and maintain state water quality standards.” In order to achieve this goal, the following objectives related to development, planning, and zoning have been established:

Objective #8-1:

Guide growth and development in Morgan County so that it enhances and improves water quality.

Objective #8-2:

Consider the impact of land use on water quality in all planning and zoning decisions.

8.2.2 Management Measures:

This section of the Watershed Management Plan addresses development, planning, and zoning issues and how those relate to water quality. As stated earlier, there is a strong relationship between land use and water quality. There are typically two or three documents that drive development, planning, and zoning in a community. These include the Comprehensive Plan, Zoning Ordinance and Subdivision Control Ordinance.

The Comprehensive Plan defines policies on a wide-range of topics and dictates how a community should grow, change, or look in the future. The policies crafted in the Comprehensive Plan become the foundation of the Zoning Ordinance and Subdivision Control Ordinance which in turn determine how land should be used and divided.

Morgan County has had an interesting history with development, planning, and zoning practices. In 1994, the County Commissioners adopted an updated Comprehensive Plan and Zoning Ordinance. Prior to 1994, the Comprehensive Plan and Zoning Ordinance were from 1956 and had been amended numerous times to meet the changing needs of the community. Both the 1994 Comprehensive Plan and Zoning Ordinance were implemented until 1997 when the County Commissioners decided to discontinue the use of regulated planning and zoning practices in Morgan County. Planning and zoning practices were reinstated in 2001 following four years of haphazard and unregulated development throughout the county.

As a positive step to reinstate planning and zoning, the current Comprehensive Plan for Morgan County identifies only the basic planning needs for the community. The Plan outlines general guidelines for residential, commercial/industrial, and agricultural land use as well as recreation and community appearance. These general guidelines do include some language, albeit limited, regarding the protection and improvement of natural resources – including water quality. The Plan Director does plan to lead the community through a more detailed Comprehensive Planning process following the completion of this Watershed Management Plan and an Economic Development Plan for Morgan County.

The Morgan County Zoning Ordinance does not contain a section that specifically addresses drainage or stormwater management. The Ordinance does include a floodplain district, which requires the first floor of structures to be two feet above the high water mark.

The current Comprehensive Plan and Zoning Ordinance for the City of Martinsville were adopted in 1994 and 2001 respectively. The second of fourteen goals listed in the Comprehensive Plan identifies

protecting and preserving the natural resources in the city including wetlands, woodlands, floodplains, drainage ways, wildlife habitats, and steep slopes. As stated in the Plan, the City of Martinsville desires to protect its valuable resources and continually raise its quality of life in the wake of future development. However, the Plan lacks specific language of how to protect and preserve the natural resources in the city.

In addition to the City of Martinsville's Zoning Ordinance, the city has adopted and enforces separate ordinances for Erosion Control, Drainage (stormwater), and Flood Hazard Areas. These separate ordinances do specifically address water quality and quantity issues.

The Town of Monrovia was incorporated in 1995. Planning and zoning were officially implemented in February 1997. Monrovia adopted a Comprehensive Plan unique to their community needs however has adopted and implements some aspects of Morgan County's zoning ordinance. The planning department is very small and depends on the support of the Morgan County planning staff. The Town was able to maintain planning and zoning practices in the community through the four years that Morgan County abolished its planning department.

The "Natural Environment, Natural Resources" section of the Town of Monrovia's Comprehensive Plan identifies quality of water supply, preservation of natural resources, and soil erosion as major issues. Objectives and policies to specifically improve or enhance water quality include 1) expand monitoring activities on septic systems, sewage treatment plants, quality and design of storm and street drainage systems and identify significant point discharges. 2) preservation of rivers, creeks, ponds, and wetlands. 3) encourage large lot development in sensitive areas or land with poor suitability for development. 4) use of appropriate erosion

control measures on all development sites and the use of special structures on drainage channels with steep slopes to reduce the velocity of stormwater runoff.

8.2.3 Loads or Contributions for the Management Measures

Although there is a growing body of research to illustrate the relationship of land use and water quality, quantifying the benefit is not as well developed as it is with other programs such as filter strips or conservation tillage. As a result, load reductions or contributions for the management measures are not available.

8.2.4 Action Plan

The following action plan items were prepared as a result of review of the current planning documents, conversations with the Planning Directors, and the issues discussed during public meetings and individual committee meetings.

Action 8-1

Conduct annual workshops and/or seminars and have fact sheets readily available for developers, planners, and decision-makers as a reminder of how land use directly impacts water quality.

Action 8-2

Update the current Comprehensive Plan, Zoning Ordinance, and Subdivision Control Ordinance for Morgan County, the City of Martinsville, and the Town of Monrovia to address water quality issues including: stormwater and drainage requirements; floodplain management; wetland protection; riparian corridor protection; tree conservation; setbacks and buffer protection; overlay zoning districts; service area boundaries; treatment of septic and sewer; limits for imperviousness; conservation design; and flexible development standards to protect natural or enhance resources

Action 8-3

Prepare a countywide Greenways Plan as a means to inventory and map the existing condition of the riparian corridors,

floodplains, and waterways with recommendations for improvement and protection.

Action 8-4

Morgan County and the Town of Monrovia should adopt a stormwater or drainage ordinance that specifically addresses water quality as well as quantity concerns through development controls. This could be a stand-alone document or incorporated into the Zoning Ordinance and Subdivision Control document as it is in the City of Martinsville.

Action 8-5

Minimize soil erosion and sediment in waterways with better construction management and practices including: education for developers and decision-makers; regular inspection of construction sites; enforce fines for construction violations; proper installation and maintenance of erosion and sediment controls; tree preservation; temporary seeding and mulching; and stabilization and vegetation of streambanks.

Action 8-6

Improve water quality through effective storage and treatment of urban, suburban, and rural stormwater runoff including: on-site stormwater treatment; constructed wetlands; detention and retention ponds; infiltration basins and trenches; vegetated filter strips and swales; and stream buffers.

Action 8-7

Determine land uses for development, agriculture, wetlands, flood storage, and forest cover based on soil suitability. Use Geographic Information Systems (GIS) and updated soil information to establish the zoning and land use maps.

Action 8-8

Determine the short-term and long-term impacts of land use change through Purdue's SedSpec and L-THIA (Long-Term Hydrological Impact Assessment) programs to identify: runoff rates; erosion problems;

BMP effectiveness; and impacts of past and proposed development.

8.2.5 Resources

The following resources will be needed in order for the successful implementation of the Goals, Objectives, and Action Plan items listed in this Watershed Management Plan. These include:

- Support from Planning Director(s), Plan Commission(s), and general public.
- List of definitions, suggested language, and model ordinances.
- List of BMPs (Best Management Practices).
- Cooperation of contractors, developers, and landowners.
- Enforcement from local and state government (Planning, Health Department, SWCD, IDNR, IDEM).
- Support from decision-makers and community leaders.
- Funds and personnel to create “Development Handbook” for decision-makers, developers, and landowners (see HHRC “Indiana Development Guide” for good reference).
- GIS layers including soils, drainage, parcel layers.
- Permission to use SedSpec and L-THIA from Purdue University.

8.2.6 Legal Matters:

Before implementation of the Goals, Objectives, and Action Plan items identified in this Watershed Management Plan, the Plan Commission, and Town Council, City Council, or County Commissioners must approve and adopt any changes or updates to the Comprehensive Plan, Zoning Ordinance, and Subdivision Control Ordinance. Such updates will need the full support of the general public in order to be successfully implemented. It is also important that scheduled inspections/reviews are conducted and fines are enforced when the rules are violated.

8.3 MEASURING PROGRESS

8.3.1 Indicators Selected to Determine Progress

Indicators are important to determine whether or not progress is being made. The following indicators may be used to determine the successful implementation of this Watershed Management Plan. These include:

1. The inclusion of a water quality section in the next update of the Comprehensive Plan complete with goals, objectives, and strategies.
2. Protection and buffering of natural areas to improve water quality.
3. The adoption and enforcement of a stormwater or drainage ordinance by Morgan County and the Town of Monrovia.
4. The completion of a countywide Greenways Plan that inventories and makes recommendations for improvement to the riparian corridors, floodplains, and waterways in the county.
5. Implementation and enforcement of erosion and sediment control techniques during construction.
6. Improved treatment of stormwater from urban, suburban, and rural runoff.
7. Land development patterns based on soil suitability.
8. GIS modeling to determine short and long-term impacts of development on water quality.

8.3.2 Monitoring Indicators

Indicators should be monitored by the Planning Director(s) and Plan Commission(s). Indicators used to measure progress such as the updates to the Comprehensive Plan, Zoning Ordinance, and Subdivision Control Ordinance should be straight forward providing sufficient time is given for adequate public participation and support. However, others such as establishing a GIS database to map soils and model development impacts will take much longer than others to implement.

8.3.3 Operation and Maintenance

The planning staff, Planning Director, and Plan Commission for Morgan County, the City of Martinsville, and the Town of Monrovia are each responsible for the operation and maintenance of the recommendations made in this Watershed Management Plan. Support of the SWCD and its Watershed Initiative partners, IDNR, and IDEM staff may be needed for guidance and enforcement.

8.3.4 Re-Evaluation of Plan

The Morgan County SWCD, in partnership with the Planning Director from Morgan County, the City of Martinsville, and the Town of Monrovia will be responsible for the regular review and update of this Watershed Management Plan. This Plan should be evaluated on a regular basis to document and celebrate progress; assess the effectiveness of efforts; and to modify the action items, if needed. A summary of the actions proposed for development, planning, and zoning can be found in Chapter 10.